

Dr. Michael Hahsler

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Current Position

Since 01/2009: Visiting Assistant Professor and co-director of the Intelligent Data Analysis (IDA) group, Department of Computer Science and Engineering, Lyle School of Engineering, Southern Methodist University, Dallas, Texas, U.S.A.

Professional Experience

08/2007-12/2008: E-Business and Marketing Research Adviser, Hall Financial Group, Frisco, Texas, USA.

05/2006-07/2007: Associate professor, Department of Information Systems and Operations and core researcher, Research Institute for Computational Methods, Vienna University of Economics and Business Administration (WU), Austria.

10/2002-02/2003: Adjunct professor, Department of Computer Science, Webster University, Vienna Campus, Austria.

02/2001-07/2006: Assistant professor, Department of Information Systems and Operations, WU, Austria.

05/1998-01/2001: Research and teaching assistant, Department of Applied Computer Science, WU, Austria.

Education

05/2006: Postdoctoral lecture qualification (Habilitation) in information systems, Vienna University of Economics and Business Administration (WU), Austria.

01/2001: Doctorate in social and economic sciences (information systems), WU, Austria.

02/1998: Master in social and economic sciences (business administration), WU, Austria.

10/1992: Graduation with excellent achievement (communication electronics), College of Technology - HTBLA Wien I, Vienna, Austria.

Research Interests

Data mining: Association rule mining, recommender systems, data stream clustering, data visualization.

E-Marketing: Market basket analysis, pricing of information goods.

Information Systems: Digital information management, digital libraries.

Software engineering: Code reuse and design patterns.

Project Experience and Awards

Since 02/2005: Lead developer of the extension packages

arules (infrastructure for analyzing transaction data with association rules),

TSP (infrastructure for the traveling salesperson problem) and

seriation (seriation/sequencing techniques)

for R, a free software environment for statistical computing and graphics.

10/2001-10/2003: Head of engineering, ePub-WU project. Development of an open access digital library for working papers and PhD theses, WU (see <http://epub.wu.ac.at>).

04/2001: 2001 University Award of the Vienna Chamber of Commerce (Wirtschaftsuniversitätspreis 2001 der Wirtschaftskammer Wien).

01/2001-12/2004: Project leader, Virtual University Project.

02/1999: Finalist of the Global Bangemann Award 1999 (Stockholm Challenge) with the Virtual University Project, Stockholm, Sweden.

10/1997-01/2001: Designer and assistant project manager, Virtual University Project, WU.

12/1997: Winner of the 1997 WU Innovation Award, WU.

Professional Memberships

ACM, ACM SIGKDD, IEEE Computer Society, GfKI (German Classification Society)

Languages

English, German (first language).

Citizenship and Residency

Austria, United States permanent resident.

Teaching Activities

Undergraduate level

- “CSE 1342: Programming Concepts,” Lyle School of Engineering, SMU, Spring 2010.
- “CSE 1341: Principles of Computer Science,” Lyle School of Engineering, SMU, Fall 2009.
- “Introduction to Information Management” (in German “Grundlagen der Informationswirtschaft”), WU, Winter 2008, Summer 2009.
- “Introduction to Programming with Java” (in German “Grundzüge der Programmierung mit Java”), WU, Summer 2002, Fall 2002, Summer 2003, Fall 2003, Summer 2004, Fall 2004, Summer 2005, Fall 2005, Summer 2006, Fall 2006, Summer 2007.
- “Information Management for Businesses” (in German “Informationsmanagement in Organisationen I / Informationswirtschaft 2”), WU, Summer 2003, Summer 2004, Summer 2005, Fall 2005, Summer 2006, Fall 2006, Summer 2007.
- “Programming Lab (Java, C++, Perl, Databases)” (in German “Rechnerpraktikum aus Programmierung”), WU, Summer 2001, Fall 2001, Fall 2002, Fall 2003, Fall 2004, Fall 2005, Fall 2006.
- “IT Internship with Thesis” (in German “IT-Praktikum mit Bakkalaureatsarbeit,”), WU, Summer 2005, Summer 2006, Summer 2007, Winter 2008, Summer 2009.
- “Introduction to Electronic Data Processing” (in German “Elektronische Datenverarbeitung: Markup-Konzepte”), WU, Fall 1998.
- “COAP 2120: Data Handling on the Web,” Webster University (Vienna Campus), Spring II 2002.
- “COAP 3110: Interactive Web Site Development,” Webster University (Vienna Campus), Fall II 2002.

Master's level

- “Current Topics in Information Management” (in German “Seminar aus Informationswirtschaft”), WU, Summer 2000, Fall 2000, Fall 2001, Summer 2002, Fall 2002, Summer 2003, Summer 2004, Summer 2005, Summer 2006, Summer 2007.
- “Introduction to Object Oriented Programming” (in German “Einführung in das objektorientierte Programmieren”), WU, Summer 1999, Fall 1999, Summer 2000, Fall 2000, Summer 2001.

Ph.D. level

“CSE 8091: Computer Science Seminar,” Lyle School of Engineering, SMU, Fall 2009, Spring 2010.

“Process Oriented Information Management” (in German “Prozessorientierte Informationswirtschaft”), WU, Fall 2006, Summer 2007.

Executive programs and professional training

“CSE 7343: Operating Systems and System Software,” Security Engineering Executive Master's Program, Lyle School of Engineering, SMU, Spring 2009.

“UML Basics: Introduction to Object Oriented Modeling” (in German “UML-Basics: Einführung in Objekt-Orientierte Modellierung mit der Unified Modeling Language”), ADV (Arbeitsgemeinschaft für Datenverarbeitung), Vienna, 2000 to 2001.

“Introduction to Object Oriented Programming with C++” (in German “Einführung in den Einsatz von Objekt-Orientierung mit C++”), ADV (Arbeitsgemeinschaft für Datenverarbeitung), Vienna, 2000.

Scientific Community Service

Editorial Board

International Journal of Open Source Software and Processes (IJOSSP), Editorial Review Board (2008-).

Organization

StreamKDD: Novel Data Stream Pattern Mining Techniques, workshop held in conjunction with the 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2010), Organizer, July 2010.

QIMIE'09 - Quality Issues, Measures of Interestingness and Evaluation of Data Mining Models, workshop organized in association with the PAKDD'09 conference, Program Committee, April 2009.

WebKDD 2008 - Knowledge Discovery on the Web, held in conjunction with the 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2008), Program Committee, August 2008.

31th Annual Conference of the German Classification Society (GfKI), co-chair for session "Tools for Intelligent Data Analysis," March 2007.

30th Annual Conference of the German Classification Society (GfKI), co-chair for session "Tools for Intelligent Data Analysis," March 2006.

WebKDD 2006 - Workshop on Web Mining and Web Usage Analysis, held in conjunction with the 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2006), Program Committee, August 2006.

Reviewer

Computational Statistics & Data Analysis

Data & Knowledge Engineering (DKE)

Electronic Commerce Research

IEEE Transactions on Knowledge and Data Engineering (TKDE)

IEEE Transactions on Systems, Man and Cybernetics (SMC)

Journal of Machine Learning Research (JMLR)

Journal of Modelling in Management (JM2)

Journal of Retailing and Consumer Service

Knowledge and Information Systems: An International Journal (KAIS)

Management Science

ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)

Annual Conference of the German Classification Society (GfKI)

Americas Conference on Information Systems (AMCIS)

Hawaii International Conference on System Sciences (HICSS)

IEEE International Conference on Data Mining (ICDM)

Research Funding

2009-2011: Co-PI, III/EAGER: Temporal Relationships Among Clusters in Data Streams (TRACDS), NSF-IIS 0948893, National Science Foundation, Division of Information & Intelligent Systems. USD 180,000

2009: Principal investigator, An Experimentation Environment for Generating Top-N Recommendations from Binary Data, Net-Centric Software & Systems Consortium, NSF I/UCRC. USD 60,000

2005-2008: Co-PI, Infrastructure for interdisciplinary research focusing on machine learning and simulation, Austrian Federal Ministry of Science and Education. EUR 179,000 (USD 230,000)

2004-2009: Principal investigator, Continuation for Digital Library – WU online publications, University Library of the Vienna University of Economics and Business. EUR 14,000 (USD 18,000)

2001-2003: Principal investigator, Digital Library – WU online publications, University Library of the Vienna University of Economics and Business. EUR 17,000 (USD 22,000)

2001: Principal investigator, Supplementary funds for the virtual university project, Vienna Chamber of Commerce. EUR 11,000 (USD 14,000)

Publications

Articles in journals

- Michael Hahsler, Christian Buchta, and Kurt Hornik. Selective association rule generation. *Computational Statistics*, 12(2):303-315, April 2008.
- Michael Hahsler, Kurt Hornik, and Christian Buchta. Getting things in order: An introduction to the R package seriation. *Journal of Statistical Software*, 25(3):1-34, March 2008.
- Michael Hahsler and Kurt Hornik. TSP - Infrastructure for the traveling salesperson problem. *Journal of Statistical Software*, 23(2):1-21, December 2007.
- Michael Hahsler and Kurt Hornik. New probabilistic interest measures for association rules. *Intelligent Data Analysis*, 11(5):437-455, 2007.
- Thomas Reutterer, Michael Hahsler, and Kurt Hornik. Data Mining und Marketing am Beispiel der explorativen Warenkorbanalyse. *Marketing ZFP*, 29(3):165-181, 2007.
- Michael Hahsler. A model-based frequency constraint for mining associations from transaction data. *Data Mining and Knowledge Discovery*, 13(2):137-166, September 2006.
- Christoph Breidert, Michael Hahsler, and Thomas Reutterer. A review of methods for measuring willingness-to-pay. *Innovative Marketing*, 2(4):8-32, 2006.
- Michael Hahsler, Bettina Grün, and Kurt Hornik. arules - A computational environment for mining association rules and frequent item sets. *Journal of Statistical Software*, 14(15):1-25, October 2005.
- Michael Hahsler. Integrating digital document acquisition into a university library: A case study of social and organizational challenges. *Journal of Digital Information Management*, 1(4):162-171, December 2003.
- Wolfgang Gaul, Andreas Geyer-Schulz, Michael Hahsler, and Lars Schmidt-Thieme. eMarketing mittels Recommendersystemen. *Marketing ZFP*, 24:47-55, 2002.
- Andreas Geyer-Schulz, Michael Hahsler, and Maximilian Jahn. Educational and scientific recommender systems: Designing the information channels of the virtual university. *International Journal of Engineering Education*, 17(2):153-163, 2001.
- Andreas Geyer-Schulz, Michael Hahsler, and Georg Schneider. The virtual university and its embedded agents. *ÖGAI Journal*, 18(1):14-19, 1999.
- Peter Bruhn, Andreas Geyer-Schulz, Michael Hahsler, and Markus Mottel. Genetic machine learning and intelligent internet agents. *ÖGAI Journal*, 17(1):18-25, 1998.

Book chapters

- Michael Hahsler, Kurt Hornik, and Thomas Reutterer. Warenkorbanalyse mit Hilfe der Statistik-Software R. In Peter Schnedlitz, Renate Buber, Thomas Reutterer, Arnold Schuh, and Christoph Teller, editors, *Innovationen in Marketing*, pages 144-163. Linde-Verlag, 2006.
- Michael Hahsler. A quantitative study of the adoption of design patterns by open source software developers. In S. Koch, editor, *Free/Open Source Software Development*, pages 103-123. Idea Group Publishing, 2005.
- Andreas Geyer-Schulz, Michael Hahsler, Andreas Neumann, and Anke Thede. Behavior-based recommender systems as value-added services for scientific libraries. In Hamparsum Bozdogan, editor, *Statistical Data Mining & Knowledge Discovery*, pages 433-454. Chapman & Hall / CRC, July 2003.
- Andreas Geyer-Schulz and Michael Hahsler. Comparing two recommender algorithms with the help of recommendations by peers. In O.R. Zaiane, J. Srivastava, M. Spiliopoulou, and B. Masand, editors, *WEBKDD 2002 - Mining Web Data for Discovering Usage Patterns and Profiles 4th International Workshop, Edmonton, Canada, July 2002, Revised Papers*, Lecture Notes in Computer Science LNAI 2703, pages 137-158. Springer-Verlag, 2003.
- Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. A customer purchase incidence model applied to recommender systems. In R. Kohavi, B.M. Masand, M. Spiliopoulou, and J. Srivastava, editors, *WEBKDD 2001 - Mining Log Data Across All Customer Touch Points, Third International Workshop, San Francisco, CA, USA, August 26, 2001, Revised Papers*, Lecture Notes in Computer Science LNAI 2356, pages 25-47. Springer-Verlag, July 2002.
- Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. myvu: A next generation recommender system based on observed consumer behavior and interactive evolutionary algorithms. In Wolfgang Gaul, Otto Opitz, and Martin Schader, editors, *Data Analysis: Scientific Modeling and Practical Applications*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 447-457. Springer Verlag, Heidelberg, Germany, 2000.

Conference proceedings

- Christoph Breidert and Michael Hahsler. Adaptive conjoint analysis for pricing music downloads. In R. Decker and H.-J. Lenz, editors, *Advances in Data Analysis, Proceedings of the 30th Annual Conference of the Gesellschaft für Klassifikation e.V., Freie Universität Berlin, March 8-10, 2006*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 409-416. Springer-Verlag, 2007.
- Michael Hahsler and Kurt Hornik. Building on the arules infrastructure for analyzing transaction data with R. In R. Decker and H.-J. Lenz, editors, *Advances in Data Analysis, Proceedings of the 30th Annual Conference of the Gesellschaft für Klassifikation e.V., Freie Universität Berlin, March 8-10, 2006*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 449-456. Springer-Verlag, 2007.
- Michael Hahsler, Kurt Hornik, and Thomas Reutterer. Implications of probabilistic data modeling for mining association rules. In M. Spiliopoulou, R. Kruse, C. Borgelt, A. Nürnberger, and

- W. Gaul, editors, *From Data and Information Analysis to Knowledge Engineering, Proceedings of the 29th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Magdeburg, March 9-11, 2005*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 598-605. Springer-Verlag, 2006.
- Christoph Breidert, Michael Hahsler, and Lars Schmidt-Thieme. Reservation price estimation by adaptive conjoint analysis. In Claus Weihs and Wolfgang Gaul, editors, *Classification - the Ubiquitous Challenge, Proceedings of the 28th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Dortmund, March 9-11, 2004*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 577-584. Springer-Verlag, 2005.
- Georg Fessler, Michael Hahsler, and Michaela Putz. ePubWU - Erfahrungen mit einer Volltext an der Wirtschaftsuniversität Wien. In Christian Enichlmayr, editor, *Bibliotheken - Fundament der Bildung, 28. Österreichischer Bibliothekartag 2004*, Schriftenreihe der OÖ. Landesbibliothek, pages 190-193, 2005.
- Michael Hahsler. Optimizing web sites for customer retention. In Bing Liu, Myra Spiliopoulou, Jaideep Srivastava, and Alex Tuzhilin, editors, *Proceedings of the 2005 International Workshop on Customer Relationship Management: Data Mining Meets Marketing, November 18-19, 2005, New York City, USA*, 2005.
- Michael Hahsler and Stefan Koch. Discussion of a large-scale open source data collection methodology. In *38th Annual Hawaii International Conference on System Sciences (HICSS'05), January 3-6, 2005 Hilton Waikoloa Village, Big Island, Hawaii*. IEEE Computer Society Press, 2005.
- Michael Hahsler and Stefan Koch. Cooperation and disruptive behaviour - learning from a multi-player internet gaming community. In Piet Kommers, Pedro Isaias, and Miguel Baptista Nunes, editors, *IADIS International Conference Web Based Communities 2004, Lisbon, Portugal, 24-26 March 2004*, pages 35-42. International Association for Development of the Information Society (IADIS), 2004.
- Andreas Geyer-Schulz, Michael Hahsler, Andreas Neumann, and Anke Thede. An integration strategy for distributed recommender services in legacy library systems. In M. Schader, W. Gaul, and M. Vichi, editors, *Between Data Science and Applied Data Analysis, Proceedings of the 26th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Mannheim, July 22-24, 2002*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 412-420. Springer-Verlag, July 2003.
- Andreas Geyer-Schulz, Michael Hahsler, and Anke Thede. Comparing association-rules and repeat-buying based recommender systems in a B2B environment. In M. Schader, W. Gaul, and M. Vichi, editors, *Between Data Science and Applied Data Analysis, Proceedings of the 26th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Mannheim, July 22-24, 2002*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 421-429. Springer-Verlag, July 2003.
- Edward Bernroider, Michael Hahsler, Stefan Koch, and Volker Stix. Data Envelopment Analysis zur Unterstützung der Auswahl und Einführung von ERP-Systemen. In Andreas Geyer-Schulz and Alfred Taudes, editors, *Informationswirtschaft: Ein Sektor mit Zukunft, Symposium 4.-5.*

September 2003, Wien, Österreich, Lecture Notes in Informatics (LNI) P-33, pages 11-26. Gesellschaft für Informatik, 2003.

Andreas Geyer-Schulz, Michael Hahsler, Andreas Neumann, and Anke Thede.

Recommenderdienste für wissenschaftliche Bibliotheken und Bibliotheksverbände. In Andreas Geyer-Schulz and Alfred Taudes, editors, *Informationswirtschaft: Ein Sektor mit Zukunft, Symposium 4.-5. September 2003, Wien, Österreich*, Lecture Notes in Informatics (LNI) P-33, pages 43-58. Gesellschaft für Informatik, 2003.

Andreas Geyer-Schulz and Michael Hahsler. Software reuse with analysis patterns. In *Proceedings of the 8th AMCIS*, pages 1156-1165, Dallas, TX, August 2002. Association for Information Systems.

Andreas Geyer-Schulz and Michael Hahsler. Evaluation of recommender algorithms for an internet information broker based on simple association rules and on the repeat-buying theory. In Brij Masand, Myra Spiliopoulou, Jaideep Srivastava, and Osmar R. Zaiane, editors, *Fourth WEBKDD Workshop: Web Mining for Usage Patterns & User Profiles*, pages 100-114, Edmonton, Canada, July 2002.

Walter Böhm, Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Repeat buying theory and its application for recommender services. In O. Opitz and M. Schwaiger, editors, *Exploratory Data Analysis in Empirical Research, Proceedings of the 25th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Munich, March 14-16, 2001*, pages 229-239. Springer-Verlag, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Recommendations for virtual universities from observed user behavior. In W. Gaul and G. Ritter, editors, *Classification, Automation, and New Media, Proceedings of the 24th Annual Conference of the Gesellschaft für Klassifikation e.V., University of Passau, March 15-17, 2000*, pages 273-280. Springer-Verlag, 2002.

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. Wissenschaftliche Recommendersysteme in Virtuellen Universitäten. In H.-J. Appelrath, R. Beyer, U. Marquardt, H.C. Mayr, and C. Steinberger, editors, *Unternehmen Hochschule*, Wien, Österreich, September 2001. Symposium UH2001, GI Lecture Notes in Informatics (LNI).

Andreas Geyer-Schulz, Michael Hahsler, and Maximillian Jahn. A customer purchase incidence model applied to recommender systems. In *WEBKDD2001 Workshop: Mining Log Data Across All Customer TouchPoints*, pages 35-45, San Francisco, CA, August 2001.

Andreas Geyer-Schulz and Michael Hahsler. Automatic labelling of references for information systems. In Reinhold Decker and Wolfgang Gaul, editors, *Classification and Information Processing at the Turn of the Millennium, Proceedings of the 23rd Annual Conference of the Gesellschaft für Klassifikation e.V., University of Bielefeld, March 10-12, 1999*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 451-459. Springer-Verlag, 2000.

Andreas Geyer-Schulz and Michael Hahsler. Lebenslanges virtuelles Lernen. In Franciszek Grucza, editor, *Europas Arbeitswelt von Morgen*, pages 51-54, Wien, 2000. Wiener Zentrum der Polnischen Akademie der Wissenschaften.

Michael Hahsler and Bernd Simon. User-centered navigation re-design for web-based information systems. In H. Michael Chung, editor, *Proceedings of the Sixth Americas Conference on Information Systems (AMCIS 2000)*, pages 192-198, Long Beach, CA, 2000. Association for Information Systems.

Andreas Geyer-Schulz, Michael Hahsler, and Georg Schneider. The virtual university as a network economy. In Heinrich C. Mayr, Claudia Steinberger, Hans-Jürgen Appelrath, and Uwe Marquardt, editors, *Informatik '99, Unternehmen Hochschule '99, Workshop-Unterlagen*, pages 75-86, Bielefeld, Germany, October 1999.

Presentations and Talks

Dissimilarity plots: A visual exploration tool for partitional clustering, CSE Colloquium, Department of Computer Science and Engineering, Southern Methodist University, Dallas, Texas, April 3, 2009.

A probabilistic approach to association rule mining. CSE Colloquium, Department of Computer Science and Engineering, Southern Methodist University, Dallas, Texas, October 10, 2008.

Generating top-N recommendations from binary profile data. Berufungsvortrag Wirtschaftsinformatik, WU Wien, July 16, 2008.

Two applications of the TSP for data analysis. 31th Annual Conference of the German Classification Society (GfKI 2007), Freiburg, March 7-9, 2007.

Probabilistische Ansätze in der Assoziationsanalyse. Habilitationsvortrag, Wirtschaftsuniversität Wien, May 19, 2006.

An association rule mining infrastructure for the R data analysis toolbox, 30th Annual Conference of the German Classification Society (GfKI 2006), Berlin, March 8-10, 2006.

Warenkorbanalyse mit Hilfe der Statistiksoftware R. WU Competence Day, Wirtschaftsuniversität Wien, 19. October, 2006.

Optimizing web sites for customer retention, 2005 International Workshop on Customer Relationship Management: Data Mining Meets Marketing November 18th & 19th, 2005, New York City, USA.

Implications of probabilistic data modeling for rule mining. 29th Annual Conference of the German Classification Society (GfKI 2005), March 9-11, 2005, Magdeburg, Germany.

Discussion of a large-scale open source data collection methodology. 38th Hawaii International Conference on System Sciences (HICSS-38), January 3-6, 2005, Hilton Waikoloa Village, Big Island, Hawaii.

ePubWU - Erfahrungen mit einer Volltextplattform an der Wirtschaftsuniversität Wien, 28. Österreichischer Bibliothekartag 2004, Linz, Austria.

Generating synthetic transaction data for tuning usage mining algorithms, March 2003. 27th Annual GfKI-Conference, Cottbus, Germany.

Software reuse with analysis patterns. AMCIS 2002, August 9-11, 2002, Dallas, Texas.

Evaluation of recommender algorithms for an internet information broker based on simple association rules and on the repeat-buying theory, July 2002. WEBKDD 2002, Edmonton, Alberta, Canada.

Patterns im Softwareentwicklungsprozeß, September 2001. ADV Arbeitsgemeinschaft für Datenverarbeitung, Wien.

A customer purchase incidence model applied to recommender services. WEBKDD 2001, August 2001, San Francisco, CA.

User-centered navigation re-design for web-based information systems. AMCIS 2000, August 2000, Long Beach, CA.

Living Lectures - WU Virtual Library: Ein Lernportal, March 2000. in Vortragsreihe "Lernen per Internet", Technische Universität Wien.

Das Living Lectures - Virtual University Projekt: Informationstechnologie im universitären Bildungsbereich, June 1999. Global Village 99.

Automatic labelling of references for internet information systems, March 1999. 23rd Annual GfKI-Conference, Bielefeld, Germany.

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